

ST. LOUIS COUNTY PLANNING COMMISSION
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September 2, 1965

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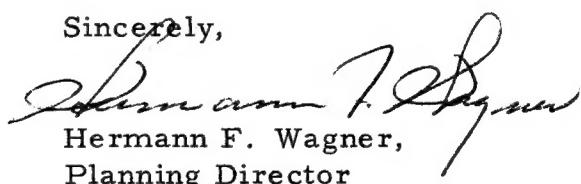
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Honorable Lawrence K. Roos,
Supervisor of St. Louis County
Court House
Clayton, Missouri 63105

Dear Mr. Roos:

We are pleased to transmit to you copies of the report, "Multi-Family Housing, St. Louis County," which the Planning Commission has published this week. We believe that this study will give the people of St. Louis County useful information as to the characteristics of multiple family housing.

Sincerely,



Hermann F. Wagner,
Planning Director

HFW:jaa

Enc.

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MULTI-FAMILY HOUSING
IN
ST. LOUIS COUNTY

A Survey and Evaluation Report

ST. LOUIS COUNTY PLANNING COMMISSION
AUGUST, 1965

ST. LOUIS COUNTY PLANNING COMMISSION

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PURPOSE

In the effort to guide orderly and appropriate development in St. Louis County, it is necessary to evaluate particular trends in housing construction. The recent increase in the construction of multi-family residences in the urban fringe warrants an investigation and evaluation of this housing submarket.

This report offers a general evaluation of the demand for multi-family housing and its impact on the values of the suburban community. The evaluation presented here is based primarily on an analysis of survey data collected on 6,751 multi-family units in St. Louis County. A review of pertinent literature on multi-family housing is also included.

I. INTRODUCTION: THE INCREASE IN MULTI-FAMILY HOUSING

Multi-family housing, once a phenomenon associated only with central cities, has in recent years pervaded the fringe of most large urban areas. More and more frequently, large apartment complexes have begun to appear in the suburbs and urban environs. This phenomenon is demonstrated by the rapid increase of multi-family construction in the preceding and present decade.

Since 1950, the number of apartment units started annually has quadrupled to 450,000 in early 1963.⁽¹⁾ In 1955, rental housing accounted for 32 percent of the total housing inventory.⁽²⁾ In the first quarter of 1963, it is estimated that 34.7 percent of all housing starts were apartments.⁽³⁾ One estimate for the first half of 1963 states that rental housing starts accounted for 37 percent of the total.⁽⁴⁾ A 1960 projection estimates that multi-family construction will add 250,000 units each year from 1960 to 1965, and will then add 360,000 units in each of the last five years of the decade, making a total estimate of 3,000,000 units built by 1970!⁽⁵⁾

It is important to note that the growth in construction of multi-family housing is not simply a reflection of a general housing construction increase. The number of single family housing starts has remained essentially unchanged for the past few years, and by March, 1963, multi-family housing starts increased 60 percent for the same period.⁽⁶⁾

This rapid increase prevails in the St. Louis Metropolitan Area and in St. Louis County in particular. This rise in multi-family construction in this County reflects the trend in apartment construction toward outward expansion from the central city.

At the time of the 1960 U.S. Census of Housing, St. Louis County had 207,313 housing units; 15,537 of which were in multi-family structures.⁽⁷⁾ In the intervening five year period through 1964, an estimated total of 46,094 housing units were added, 13,287 of which were in

structures containing three or more housing units. (8) In this five year period, therefore, multi-family housing has risen from 7.5 percent of the total housing inventory to 11.4 percent. Although this figure, taken by itself, does not seem particularly significant, it represents a large increase in the proportion of construction devoted to multi-family structures. The number of housing units in three or more family structures has risen from 15,537 in 1960 to a total of 28,824 in 1964, or an increase of 85.5 percent. This increased proportion, while not yet substantial enough to offset the existing single family housing base, may be predictive of radical change in the ratio of single family to multi-family structures in St. Louis County. The annual breakdown for the period discussed is given in the following table:

TABLE I
HOUSING UNITS BY TYPE OF STRUCTURE
ST. LOUIS COUNTY

	Single Family	Two Family	3-4 Family	5 or more Family	Total	Percent 3 or more Family*
1960(a)						
Incorporated	3,492	230	488	716	4,926	24.4%
Unincorporated	3,266	6	84	179	3,535	7.4%
Total	6,758	236	572	895	8,461	17.3%
1961(b)						
Incorporated	2,799	117	416	534	3,866	24.6%
Unincorporated	3,078	2	308	264	3,652	15.7%
Total	5,877	119	724	798	7,518	20.2%
1962(c)						
Incorporated	2,750	180	689	508	4,127	29.0%
Unincorporated	3,521	18	136	462	4,137	14.5%
Total	6,271	198	825	970	8,264	21.7%
1963(d)						
Incorporated	2,620	192	927	2,248	5,987	53.0%
Unincorporated	3,976	90	376	345	4,787	15.1%
Total	6,596	282	1,303	2,593	10,774	36.2%

TABLE I (Continued)

	Single Family	Two Family	3-4 Family	5 or more Family	Total	Percent 3 or more Family*
1964(e)						
Incorporated	1,625	190	479	2,140	4,434	59.1%
Unincorporated	4,619	36	316	1,672	6,643	29.9%
Total	6,244	226	795	3,812	11,077	41.6%

- (a) U. S. Department of Commerce, "New Housing Units Authorized by Building Permits, Annual Summary, 1960," Construction Reports: Building Permits, (C40-28)
- (b) U. S. Department of Commerce, op. cit., 1961 (C40-38)
- (c) U. S. Department of Commerce, op. cit., 1962 (C40-50)
- (d) U. S. Department of Commerce, op. cit., 1963 (C40-63)
- (e) U. S. Department of Commerce, op. cit., 1964 (C40-74)

* Computed from data cited.

The reasons for this rapid increase, both nationally and locally, lie in the changing composition of our population. The propensity to rent, rather than own, correlates with particular ages and types of family structure. The numerical increase in the population, of persons having these demographic characteristics, would naturally increase the demand for apartments. There has been an increase in these population components in recent years and projections indicate that the number of persons having these characteristics will continue to rise. This report will discuss the demographic characteristics of our population which indicate an increasing trend toward rental housing.

Concomitant with the increased demand for—and construction of—multi-family housing, is a related phenomenon concerning the types of structures being built and the impact this new housing has on the local community. In many ways, the typical new suburban apartment building has little in common with its older central city counterpart. The image of an apartment complex as a development containing a highly dense, lower income, large family population, is an older urban phenomenon and in

general, does not apply to newer suburban developments. Since many municipal officials, urban planners, and developers have become interested in the particular social characteristics associated with suburban multi-family development, and their consequent impact on the nature and values of the local suburban community, our major emphasis and contribution to the literature will be an analysis of the social composition of suburban multi-family development in St. Louis County. In order to achieve this goal, the St. Louis County Planning Commission has conducted an extensive survey of the population of multi-family structures. The results of this survey will be presented and discussed in this report.

The survey proper investigated apartments built since 1960. In these developments, 3,964 housing units were included in the survey. A smaller sample was taken of older developments. In those developments built prior to 1960, 2,787 units were included in the survey. Our survey approach and method are discussed in detail in the appendix to this report.

Realizing that the multi-family structure itself occupies a particular position in respect to other structures within the suburban community, we will also discuss some recommendations for appropriate suburban developments.

TOTAL HOUSING UNITS BY TYPE OF STRUCTURE SINCE THE 1960 CENSUS

ST. LOUIS COUNTY, MISSOURI

HOUSING UNITS

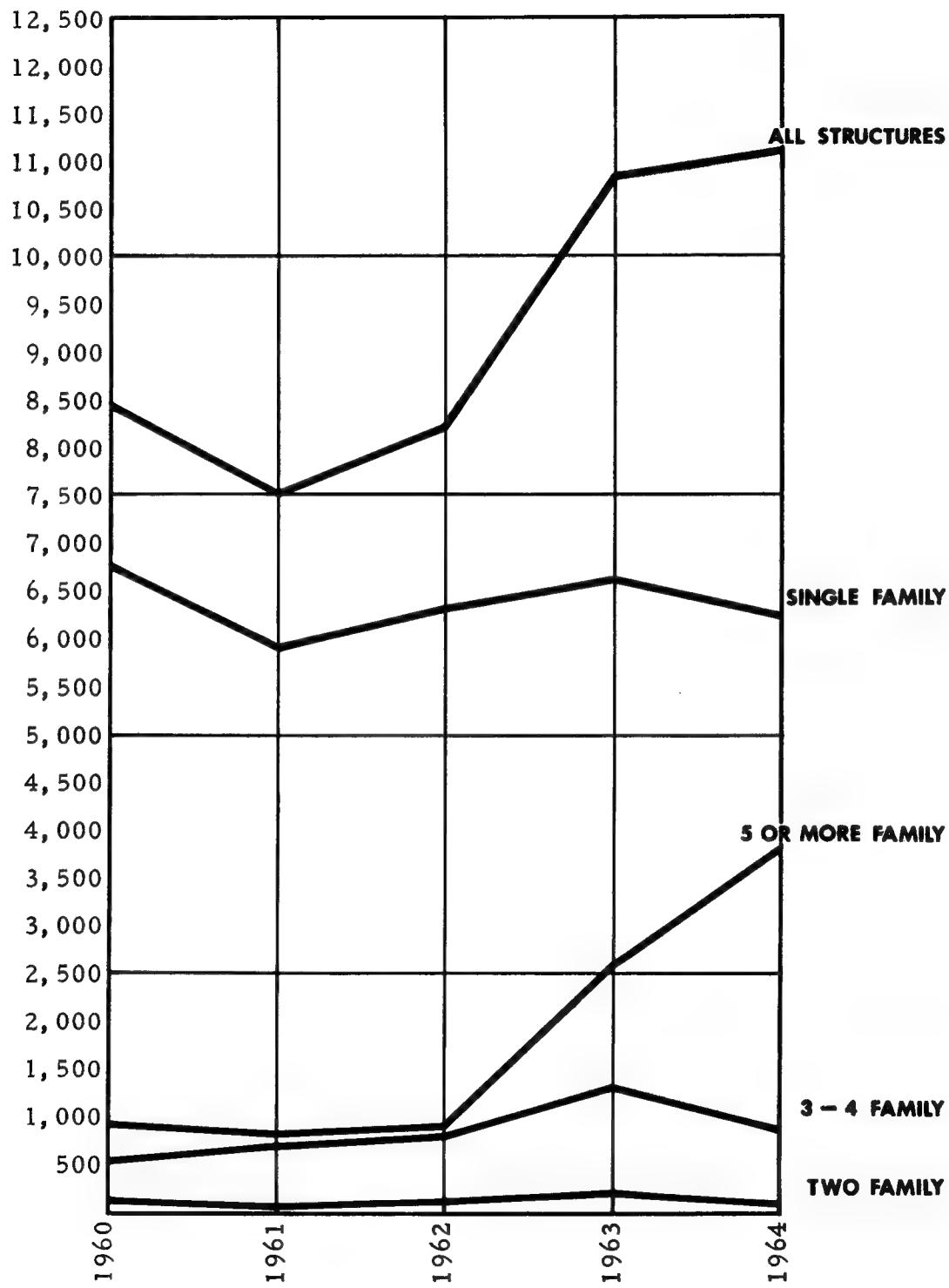


FIGURE 1

SOURCE: "New Housing Units Authorized by Building Permits,"
Annual Summaries, 1960, 1961, 1962, 1963, 1964,
U. S. Department of Commerce

PERCENT UNITS IN THREE-OR-MORE FAMILY STRUCTURES

INCORPORATED - UNINCORPORATED - TOTAL
ST. LOUIS COUNTY, MISSOURI

PERCENT

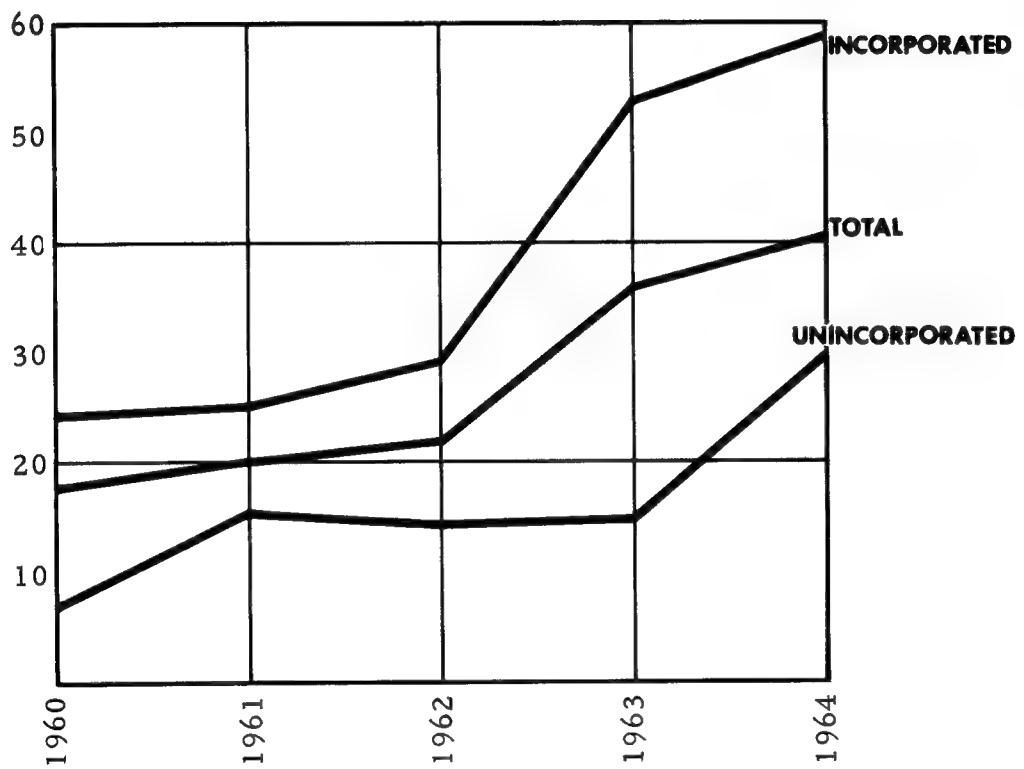


FIGURE 2

SOURCE: "New Housing Units Authorized by Building Permits,"
Annual Summaries, 1960, 1961, 1962, 1963, 1964,
U. S. Department of Commerce

II. DEMOGRAPHIC AND SOCIAL CHARACTERISTICS OF APARTMENT DWELLERS: CAUSES OF THE INCREASE

The demand for multi-family housing is highly correlated with two important demographic variables—age and type of household. The propensity to rent rather than own is greater among particular age groups in the population. The young adult and the elder citizen tend to rent, as a group, to a greater extent than do other age groups in the population. Household composition is also an important determining factor for apartment demand. The two-person and one-person households, as a group, tend to prefer apartment living to a great extent. Household composition and age are obviously inter-related. Louis Winnick, in a census monograph, summarizes the life cycle as it applies to type of household:

"An individual begins life in a household headed by his father... and remains in the status of a child until his early twenties, the most typical age of marriage. At this point, household status shifts to either head or wife of head... During the next two decades, children appear and grow up to repeat the cycle of the parents. As their own children leave, the couple remains as a husband-wife, two-person household. With declining age-specific rates, the interval of this phase of the life cycle has lengthened. The death of one spouse (generally the husband) causes, in a substantial number of cases, the household to go out of existence; in the majority of cases, however, there is merely a shift in status of the survivor from wife of head to head of household."⁽⁹⁾

The two person household usually consists of young couples beginning marriage and the elderly retired couple whose children have moved away. This type of household is stable as a family, but will change in terms of size and housing preference. The one-person household is unstable in terms of household size and location. In general, the one-person

household is a temporary condition of the very young or very old. Louis Winnick seems to feel that one-person households may serve as a reservoir of housing demand, appearing on the market to fill vacancies in older deteriorated housing, "...and thus limit any tendency for housing to filter out, i.e. to be demolished or boarded up for lack of tenants willing to pay a rent sufficient to meet housing costs."⁽¹⁰⁾ Our survey indicates, however, that one-person households are also prevalent in the newer suburban developments. As shown in Table II, twenty-three percent of the housing units surveyed consisted of one-person households. Eight percent consisted of roommate households.

Our survey confirms the particular population composition of multi-family development. Thirty-one percent of our sample consisted of one-person or roommate households. Another thirty-eight percent consisted of couples without children. These figures varied in terms of the size of the apartment, with ninety-five percent of the one bedroom apartments being occupied by single persons or couples without children; fifty-three percent of the two bedroom apartments containing households without children; and thirty-four percent of the three bedroom apartments had this household composition. The total breakdown by household composition is shown in the following table.

TABLE II
ST. LOUIS COUNTY SURVEY
HOUSEHOLD COMPOSITION SINCE 1960: PERCENT

Household Composition	<u>Number of Bedrooms</u>			
	One Bedroom	Two Bedrooms	Three Bedrooms	All Units
One person	41.9	16.1	5.7	23.4
Roommates	6.7	9.2	7.6	8.1
Couple, no children	46.3	38.0	20.5	38.4
Couple, one child	2.1	20.1	19.3	14.3
Couple, two children	.6	9.0	20.5	7.7
Couple, 3 or more children	.2	2.5	20.3	3.8
Widowed, Divorced with children	2.2	5.1	6.1	4.3
Total (Number of cases)	100.0% (1,216)	100.0% (2,270)	100.0% (409)	100.0% (3,895)

Our survey also contained thirty efficiency apartments and thirty-nine four bedroom apartments. Ninety-seven percent of the efficiency apartments contained single persons and couples without children. Only twenty-eight percent of the four bedroom apartments contained households without children.

Our survey sample of older developments demonstrated the fact that this particular emphasis on small households does not vary greatly with age of development. In those developments built prior to 1960, seventy-four percent of all units contained single persons or couples without children. Ninety-four percent of the one bedroom units contained households without children; sixty-two percent of the two-bedroom units had no children, and twenty-six percent of the three-bedroom units contained households without children. The breakdown for these older developments was as follows:

TABLE III
ST. LOUIS COUNTY SURVEY
HOUSEHOLD COMPOSITION PRIOR TO 1960: PERCENT

Household Composition	<u>Number of Bedrooms</u>			
	One Bedroom	Two Bedrooms	Three Bedrooms	All Units
One person	44.9	15.9	8.2	27.8
Roommates	6.1	11.3	6.1	8.8
Couple, no children	42.9	35.1	11.6	37.2
Couple, one child	2.7	17.5	12.2	10.9
Couple, two children	.4	8.8	31.9	6.5
Couple, 3 or more children	----	3.2	18.4	2.7
Widowed, Divorced with children	3.0	8.2	11.6	6.1
Total (Number of cases)	100.0% (1,193)	100.0% (1,447)	100.0% (147)	100.0% (2,787)

Nationally, there has been an increase in household formation, and particularly in the formation of one and two-person households. The six largest metropolitan areas tended to account for approximately half of the

new rental housing construction in the last decade. The central cities in four of these areas actually lost population from 1950 to 1960, but for the same period, all six had significant gains in the number of households.⁽¹¹⁾

While household composition is an important factor for investigating apartment demand, it is intimately related to the more basic factor of the age composition of the population. The underlying demand factor for rental housing would seem to be a major shift in the age distribution of the nation.

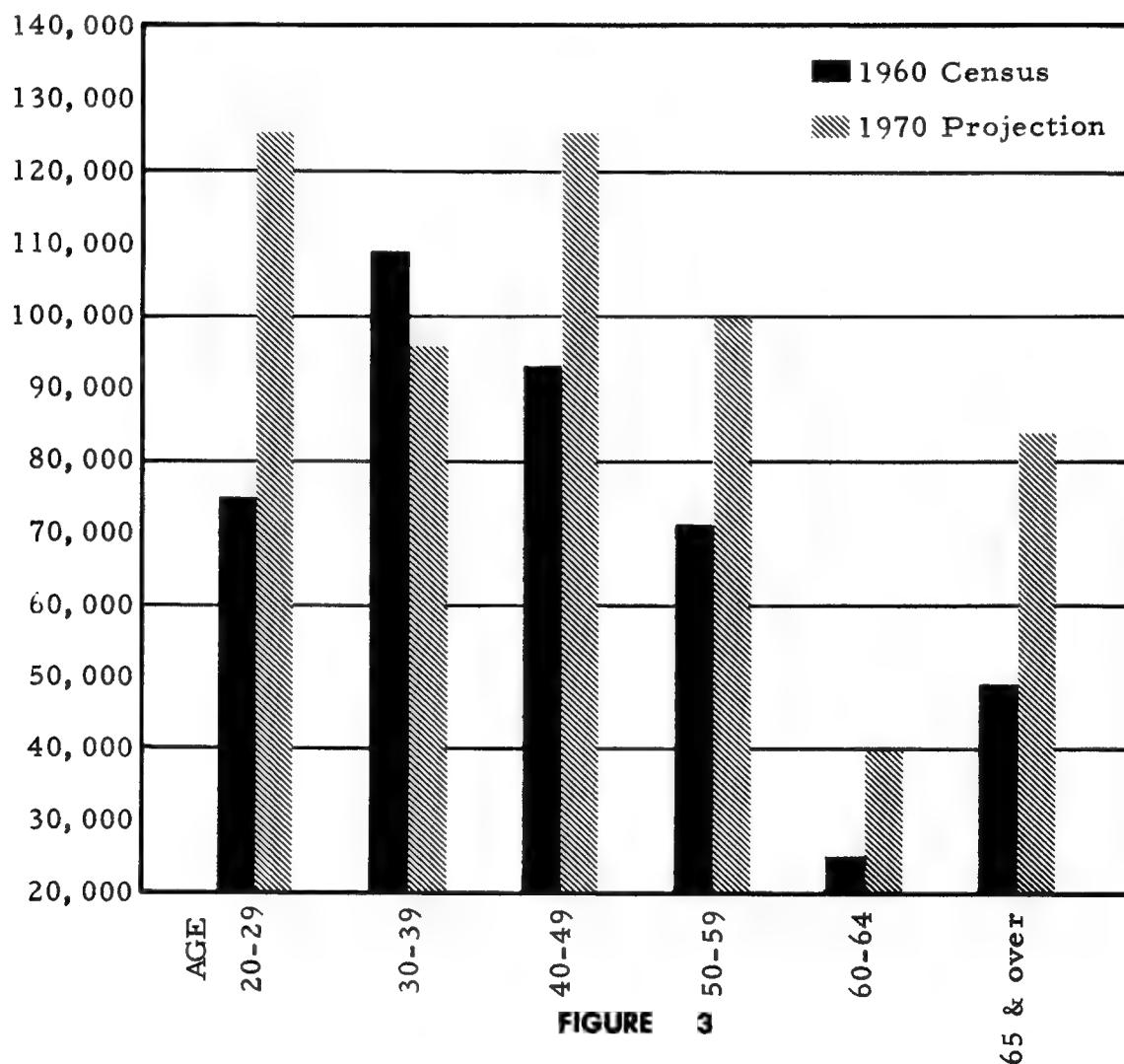
The age distribution of a given population at a particular point in time, not only gives us a description of the present population, but tells us a great deal about the past and future potentialities of this population. Looking at a given population grouped in five or ten year intervals, using census years as a base, we can predict some aspects of population growth. A large female population in the 10-14 year category will be of child-bearing age by the next census. Assuming a closed population (no migration) we can predict the future age distribution of a population, on the basis of age-specific birth and death rates. For local areas, estimates of migration can also be made, allowing the projection to relate more closely to reality.

For the purposes of this report, we will utilize a set of age-projections for 1970, developed by Dr. David B. Carpenter and Dr. Sarah L. Boggs. In order to demonstrate projected population increases in those age cohorts most relevant to rental housing, we have combined some age categories, not shown the younger cohorts, and have computed percent change for the data.

POPULATION BY AGE 1960 AND PROJECTED 1970

ST. LOUIS COUNTY, MISSOURI

POPULATION



FIGURE

3

SOURCE: School District Organization in St. Louis County, Missouri,
Education Field Services, University of Chicago, June, 1962,
(Projections by David B. Carpenter and Sarah L. Boggs,
Washington University, St. Louis)

TABLE IV
ST. LOUIS COUNTY
POPULATION BY AGE: 1950, 1960, AND PROJECTED 1970*

Age	1950 Census	1960 Census	1970 Projected	'50-'60 Percent	'60-'70 Change
20-29 years	60,185	75,546	125,000	25.5%	65.5%
30-39 years	66,368	109,911	96,000	65.6%	-12.7%
40-49 years	59,556	93,577	125,000	57.1%	33.6%
50-59 years	43,270	71,717	100,000	65.7%	39.4%
60-64 years	14,597	24,587	40,000	68.4%	62.7%
65 years & over	28,271	49,185	84,000	74.0%	70.8%

* 1970 projections by David B. Carpenter and Sarah L. Boggs, in School District Organizations in St. Louis County, Missouri, Education Field Services, Graduate School of Education, University of Chicago, June, 1962. The age intervals were combined and percent change was computed, by the Planning Staff, for the purposes of this report.

The projected increase of sixty-five percent or 49,000 persons in the cohort, ages 20-29 years, indicates that there will be a larger proportion of our population occupying rental housing, since persons in this age grouping forming new household formations tend to be those having the greatest proclivity for multi-family housing. There is also a projected increase of seventy percent in the number of persons who will be 65 years or older. This group also tends to have a propensity for rental housing.

The demand for multi-family housing is, therefore, related to age and household composition. Newly married couples, single persons, and retired couples tend to utilize rental housing. While the variables of age and household composition are the most important, there are several other distinctive groups in the population who tend to utilize rental quarters. Louis Winnick, in his monograph on rental housing, states that aside from the groups we have already discussed, the following types of persons tend to utilize rental housing: (12)

- A. The Highly Mobile - Research indicates that a large percentage of all movers is comprised of repeat movers. Winnick

- feels that this group tends to move due to job demands that make home ownership impractical.
- B. Minority Groups - Because of low income and discrimination in single family neighborhoods, some groups tend to gravitate toward apartment rental. These groups, if forced to choose apartment accommodations tend to settle in the central city in low rental areas, as opposed to the newer suburban multi-family housing.
- C. The Financially Insecure - Here, lack of long-term guaranteed income would incline persons toward apartment living. The financially insecure may not necessarily be of low income levels, but can include young couples just beginning marriage. This group may prefer suburban multi-family housing.
- D. The House Haters - Here, Winnick discusses persons at all income levels who have an aversion to ownership. Winnick feels that this group is rather large and probably has formed the backbone of the high-quality rental housing market.

It is obviously more difficult to statistically analyze and project these groups than it is the demographic variables of age and household composition. Some indications of mobility are available from our St. Louis County Survey. Length of stay in the apartment complex was tabulated for all respondents. This information is obviously not valid for the tenants living in the complexes built since 1960, since most of these developments have been up too short a time for any pattern to develop. Our data on length of stay is taken, therefore, from the tabulation of developments built prior to 1960. For all units built prior to 1960, the mean length of stay was three years and five months. The size of the housing unit seems to take on importance here, with the length of stay varying directly with an increase in the number of bedrooms. The larger the apartment, the greater the average length of stay. The one-bedroom apartments had a mean length of stay of two years, seven months; the two-bedroom apartments yielded an average of three years, four months; and the three-bedroom units had an average length of stay of four years and seven months. The complete

breakdown for these older developments is as follows:

TABLE V
ST. LOUIS COUNTY SURVEY
LENGTH OF STAY PRIOR TO 1960: PERCENT

Length of Stay	<u>Number of Bedrooms</u>			All Units
	One Bedroom	Two Bedroom	Three Bedroom	
Less one year	42.1	37.9	32.7	39.4
One year-1 year, 11 months	17.4	19.6	17.7	18.6
2 years-2 years, 11 mos.	10.0	12.9	9.5	11.5
3 years-4 years, 11 mos.	11.9	11.2	6.8	11.3
5 years-9 years, 11 mos.	10.8	11.4	22.4	11.7
10 years and over	7.8	7.0	10.9	7.5
Total (Number of cases)	100.0% (1,193)	100.0% (1,447)	100.0% (147)	100.0% (2,787)

It would seem, therefore, on the basis of our sample of older developments, that while the highly mobile may constitute some portion of the apartment population, they are not the dominant sector. While statistical evidence was not gathered on previous residence, the field surveys of both older and newer developments did seem to indicate that aside from older retired persons, and newly married couples, most of the tenants did come from apartment residences prior to their present occupancy. In this regard, the literature on apartments indicates that high-rent tenants seem to wish to live as close as practicable to their previous residence. Anshel Melamed, in his research, feels that this preference is particularly true of suburban areas and is partially conditioned by prestige factors.⁽¹³⁾ It seems that many suburban apartment dwellers come from suburban, while the migrant from the city may tend to stay in the central area until he is able to purchase a home. However, much more research is needed on this aspect.

The population characteristics discussed in this section seem to be

the most salient in stimulating actual demand for multi-family housing. There are, however, several factors influencing multi-family housing construction which should be mentioned here. These factors are artificial in the sense that they are not necessarily related to actual need. A great deal of housing construction stimulated solely on the basis of these factors might lead to a great deal of over-building. We need to discuss this aspect briefly, however, since the existence of these factors may stimulate an increase in construction. Any such increase needs to be taken into account in any analysis of future need. ⁽¹⁴⁾

The abundance of a money market combined with increased permissible divided rates on bank savings since 1961 has increased the advantages for investment in apartment mortgages. Here, "large quantities can be lent in a single package." ⁽¹⁵⁾

There is some evidence, although not well documented, that the post-war boom in single family housing created strong well functioning economic units among developers. There is also some evidence that the demand for sale housing backlogged since World War II was largely satisfied by the end of the 1950s. With the market contracting to only the annual gain in households, substantial production capacity was stimulated to enter the rental housing field. These developers would tend to remain in light construction, duplexes and walk-up apartments instead of converting entirely to high-rise construction. ⁽¹⁶⁾ This switch-over from single family to multi-family construction on the basis of a lack of single family housing demand might be considered in the nature of an artificial stimulant.

Two other economic variables stimulating multi-family construction need to be mentioned here. The Internal Revenue Code of 1954 offered rental investors the opportunity to qualify for accelerated depreciation during the early years of the investment. This opportunity has probably done a great deal to stimulate investment in multi-family construction. ⁽¹⁷⁾

The recent slowing down of the 1950 inflation trend tends to make a speculative real estate holding less profitable as a source of gain. Wise

investors, therefore, desire to develop a property for its maximum permissible use in order to realize currently achieved market values. This would tend to increase the development of multi-family construction as the market tends to deflate. ⁽¹⁸⁾

It is also possible that a "contagion effect" is present in factors influencing multi-family housing construction. The presence of one large apartment building may, in itself, tend to stimulate similar construction in the immediate area without regard to actual local demand. The mere presence of multi-family housing in an area does not of itself mean a need for more construction of the same type in the area.

A survey by National Association of Home Builders' Economic Council suggested that artificial stimulants were a significant factor in the current rental housing boom. As N. A. H. B. puts it, "... when supply stimulants not directly related to demand are combined with the long lead time involved in putting apartment buildings on the market, the danger of substantial overbuilding would appear to multiply." ⁽¹⁹⁾

It would thus seem that estimates of present demand for multi-family housing and the projection of such demand must rest upon an analysis of demographic and other social variables influencing such demand. Economic components which influence construction, but are not directly related to actual need should be noted, but not utilized in projecting a demand figure based on expected numbers of persons needing apartments.

III. THE IMPACT OF MULTI-FAMILY HOUSING ON THE SUBURBAN COMMUNITY

The rapid increase in multi-family construction in suburban areas is a relatively recent phenomenon, which is justifiably causing some concern in communities whose housing inventory has predominantly consisted of single-family development. The traditional "escape to the suburbs" has traditionally implied an escape from a crowded, congested apartment flat to a spacious dwelling on one's own land, complete with fence, barbecue pit, and dog. The presence of large multi-family development in this idealistic picture seems to some to be a gross invasion, shattering the suburban dream.

While the existence of a new trend in land use of somewhat considerable magnitude is an occasion for reflection and analysis, it must be pointed out that the recent suburban apartment dweller is a different person than the typical urban apartment tenant of thirty years ago. In this chapter, we shall discuss in some detail the characteristics of suburban multi-family development and the population of this type of housing relative to their impact on the suburban community.

A. Impact of Apartment Construction on the Suburban Schools

Typically, the first concern of a community, upon perceiving a rapid rise in apartment development, has been a concern for the impact on the local school system. Looking only at density and raw number of housing units, many communities see an influx of apartments as bringing with them a proportional number of new school age children to burden the existing system. It is important to note here that an absolute increase in housing units is not by any means *prima facie* evidence of an increased burden on the community's schools. The age and household composition of the apartment population, which was analyzed in our last chapter would indicate that apartments do not necessarily contain a great many children. Our St. Louis County Survey reinforces this view.

For comparison purposes, it is desirable to begin with some estimate of the number of children per single family housing unit. Since our survey did not encompass single family housing, an estimate was derived from secondary data. Utilizing the U. S. Census 1960 Census Tract Report for the St. Louis Standard Metropolitan Area,⁽²⁰⁾ we isolated forty census tracts throughout St. Louis County which were void of housing structures having over two families. The number of school age children in these predominantly single-family areas was then tabulated and compared to the total housing units in these tracts. This tabulation yielded 49, 549 housing units having 49, 404 children, ages five to nineteen years, which is equivalent to .997 children of school age per housing unit, or approximately one school age child per housing unit.

It should be fairly obvious that multi-family developments would contain fewer children than this rather high total. In our study of developments built since 1960, all units tabulated yielded a total of .19 children of school age, (ages five to eighteen years) per dwelling unit, which is a total of nineteen children per one hundred units. This rather low figure does not seem to be a function of the newness of the development. On the contrary, when this tabulation was performed on the older developments, the number of children for all units tabulated was .14 or 14 school age children per one hundred apartment units.

Studies conducted elsewhere tend to confirm our findings, and in some cases found fewer children in apartment areas than is the case in St. Louis County. Dominic Del Guidice, in a study of four high-rise developments in Stamford Connecticut,⁽²¹⁾ found 13.2 pupils per one hundred housing units. In his area, the city-wide average was fifty school children per one hundred units, which is approximately half of our single family estimate of one hundred pupils per one hundred units. Del Guidice also investigated an older development and also found that there were fewer children in this apartment high-rise than in the newer ones.

Anshel Melamed, discussing a school census conducted in

Philadelphia, found only 1.6 pupils per one hundred units in 1,036 high-rental high-rise apartments. (22) Investigating low-rise, medium-rental units in the suburbs, Melamed found an average of only eight pupils per one hundred units. (23)

Several recent studies of garden apartment developments have added some sophistication to these ratios by controlling for size of structure and number of rooms. George Sternlieb in a New Jersey study has found that there is a definite link between size of development and density of school age population. (24) Surveying more than twenty New Jersey communities, Sternlieb found that for the garden apartment developments as a whole, there was an average of .273 students per apartment. When Sternlieb pulled out the three largest housing developments, the residual number was reduced to .19 students per apartment unit. As Sternlieb points out, "With all other factors equal, as soon as a development reaches the range of four or five hundred apartments, the proportion of children seems to increase very sharply." (25) Sternlieb also substantiated a rather obvious finding that rent per room is a significant factor. Low rentals coincide with a high proportion of children.

One major contribution of Sternlieb's study is his analysis of the relation between number of children and size of apartment unit. In his study, the number of children per apartment is directly related to the number of bedrooms, with the number of children per apartment increasing rapidly as one approaches the three bedroom unit. (26)

A study of a small sample of garden apartment residents in Windsor, Connecticut, showed .7 children per apartment, as compared with an average of 2.5 children per dwelling unit in the surrounding single-family subdivision. Here too, the children resided in the larger apartments. (27)

A very ambitious study of over 45,000 apartment units in the Toronto Metropolitan Area has demonstrated the validity of the relationship between number of children and size of unit. In this survey, the average number of children increased with size of suite. The efficiency

and one bedroom apartments averaged only one percent occupied by families with children in the entire Metropolitan Area. Over half of the three-or-more bedroom apartments contained children. It is important to note, however, that of all apartment households surveyed, less than one-quarter contained families with children. One-half of all apartments were occupied by couples without children, and over one-quarter by non-family households. (28)

Original survey work offers us the possibility of controlling for the variables discussed in these other studies. Verifying Sternlieb's conclusions regarding variations in number of children in terms of the size of the unit, our study found the following differences in number of school age children as related to the number of bedrooms in the unit.

TABLE VI
ST. LOUIS COUNTY SURVEY
NUMBER OF CHILDREN
AGES 5-18 PER HOUSING UNIT

	<u>Number of Bedrooms</u>			
	One Bedroom	Two Bedrooms	Three Bedrooms	All Units
Units Built Since 1960	.03	.18	.70	.19
Units Built Prior to 1960	.02	.18	.73	.14

Our small sampling of efficiencies built since 1960 yielded no children of school age and the sample of four bedroom apartments yielded 1.00 children per unit. The average age of the children was also computed. In one bedroom units, the mean age was eight years; in the two bedroom units, it was six years; and in the three bedroom units, it was approximately seven years. The overall average was seven years.

It can be seen that while apartments in general do not contain a great many children, we do find larger numbers of children as apartment size increases.

Looking only at this table, one might feel that the results might be idiosyncratic in terms of the nature of a "one-shot" survey. It is felt that the comparison to the older units given above adds some validity to our findings. In order to explore the rather unlikely possibility that the next generation of school children would not move out, but would remain in the same developments, we tabulated the number of children age 0-13 years, in order to see if the increase would be out of the ordinary. While the number of children of school age does increase, the results are still below the single family average of one child per unit.

TABLE VII
NUMBER OF CHILDREN AGES 0-13
PER HOUSING UNIT: SINCE 1960

One Bedroom	Two Bedrooms	Three Bedrooms	All Units
.03	.37	.97	.33

Our survey also investigated possible relationships between the size of the development and the number of school children per unit. For all units built since 1960 included in the survey, we found an average of nineteen persons of school age per one hundred units. When total size of development is taken into account, there does seem to be a relationship between children and size of development, indicating that with larger developments, the presence of children may encourage other persons with children to move in. This relationship seems to be present in developments having over one hundred units. Our study contained only three developments having over 400 units, and the relationship between size of development and number of children might have been stronger with a bigger sampling of larger developments. In this tabulation, the size of the development was judged in terms of total size after completion of the project. That is, if a development now has 350 units but is under construction, and will have 450 units when completed, we classified this development as having over 400 units.

For all units, we found that developments with under one hundred apartments had an average of .13 school age children, per unit. Developments with 101-199 units had an average of .27 children per unit, and those with over 200 units had an average of .24 school age children per unit.

We have refined Sternlieb's type of tabulation by controlling for number of bedrooms, as well as size of development at the same time. This variable classification allows us to look at size of development while controlling for variations due to the number of bedrooms involved. This classification is as follows:

TABLE VIII
ST. LOUIS COUNTY SURVEY
NUMBER OF CHILDREN AGES 5-18 PER HOUSING UNIT
BY SIZE OF DEVELOPMENT AND NUMBER OF BEDROOMS

No. of Units	One Bedroom	No. of Units	Two Bedroom
50-100	.03	50-100	.23
101-199	.01	101-199	.26
200-300	.03	200-300	.31
301-499	.06	301-499	.15

No. of Units	Three Bedroom	No. of Units	All Size Units
60-200	.85	50-100	.13
201-300	.70	101-199	.27
301-499	.69	200-300	.24
		301-499	.24

It can be seen here that while size of development may have some relationship to the number of children of school age, this relationship is by no means a clear one, when we control for the number of bedrooms. It would seem, therefore, that apartment size plays a much more important role here than does the size of the development.

The density of the development, as well as its size, was investigated. Each manager or owner was asked the total gross acreage of his complex. Defining density as the number of dwelling units per acre, we computed the density of each development in our sample, for which we had a total acreage. For the developments built since 1960, the average density was 15.8 units per acre. The lowest density found was 4.9 units per acre, and the highest was 42.5 units. For developments built prior to 1960, the average density was twelve units per acre. When the sample of twenty-five developments was divided into developments within incorporated and unincorporated areas, an interesting finding appears. The eighteen developments of our sample which were within municipalities yielded an overall average of 14.9 units per acre. The seven developments which were unincorporated had an average density of 18.1 units per acre. It would seem more probable that the highest densities would occur within built-up areas instead of in the unincorporated portion. The opposite finding would seem to be due, at least in part, to rigid controls on apartment development on the part of municipal officials. In many cases, an apartment complex within a small municipality is a totally new type of land use, and is treated with unusual caution on the part of the local administration. This might tend toward emphasis on lower densities within these municipalities.

There does seem to be some variation in the number of children of school age related to varying densities. However, this is obviously related to the size of the development and the number of bedrooms involved. This breakdown is as follows:

TABLE IX
 ST. LOUIS COUNTY SURVEY
 NUMBER OF CHILDREN AGES 5-18 PER HOUSING UNIT
 BY DENSITY (UNITS PER ACRE) AND NUMBER OF BEDROOMS

Units Per Acre	One Bedroom	Two Bedroom	Three Bedroom	All Size Units
Under 10 units	.03	.18	1.05	.28
10-14 units	.01	.26	.66	.32
15-20 units	.03	.33	1.16	.21
21 units and over	.07	.13	.41	.19

Other researchers have also discussed the rather obvious finding that the lower the rent in a given development—the higher the proportion of children. Again controlling for the number of bedrooms, our survey generally substantiates this finding.

TABLE X
 ST. LOUIS COUNTY SURVEY
 NUMBER OF CHILDREN AGES 5-18 PER HOUSING UNIT
 BY MONTHLY RENT AND NUMBER OF BEDROOMS

Monthly Rent	One Bedroom	Monthly Rent	Two Bedrooms	Monthly Rent	Three Bedrooms
\$ 76-100	.01	\$ 86-100	.19	\$ 91-131	.93
\$101-124	.02	\$101-124	.20	\$132-172	1.00
\$125-134	.01	\$125-134	.39	\$173-216	.83
\$135-145	no children	\$135-145	.17		
		\$146-175	.16		

While fewer children are found in the more expensive apartments, it seems that here also, the number of bedrooms present in the unit, are more important regarding the number of children than is the amount of rent. The mean rent for our sample of units built since 1960 was \$104.25 for one bedroom apartments, \$121.08 for two bedroom apartments, and \$163.42 for three bedroom apartments.

To summarize briefly, the garden apartments surveyed contained, on the average, nineteen children of school age per one hundred units. A tabulation of single family census tracts in St. Louis County was made which yielded an average of one child of school age per unit. When the number of bedrooms was controlled, it was found that the number of children present varied directly with the size of the apartment, with .03 children per unit in the one bedroom apartments, and a high of .73 children in the three bedroom apartments. Our sample of older developments reinforced this relationship with the average number of children being 14 children per unit. With the size of the development held constant, there is some evidence that the larger the development, the higher the proportion of children, however, it would seem that this relationship is much weaker than the relation of number of children to apartment size. It would also seem that while fewer children are found in very high rental apartments, the size of the apartment is again the most important variable.

B. Impact of Apartment Construction on the Suburban Tax Base

The large tax potential of apartments, particularly the high-rise type, is fairly well known and will not be greatly stressed here. Melamed points out that in his area of study, no other suburban use exceeds the tax potentials of high-rent, high-rise apartments on a per-acre basis. Melamed's study of average market value per acre showed that, "Even in suburban apartment developments at densities far below the downtown level, market value per acre was as high as or higher than any other prime ratable."⁽²⁹⁾ Market value for professional uses was rated at \$97,400 an acre, industrial uses at \$91,700 an acre, and regional shopping centers at \$110,000 an acre. In comparison with these uses, high-rent, high-rise apartments were valued at \$259,500 an acre, and garden-type developments were valued at \$120,600 an acre. The lowest density apartment development at twelve units to the gross acre showed a market value of \$136,400 per acre, while a thirty unit to the acre high-rise development came to \$344,000 per acre.⁽³⁰⁾ Melamed calculated that high-rise

apartments produced the second highest gross property tax revenue, being exceeded only by heavy industry. He also estimated that high-rise development typically exceeded all other uses in per-acre tax revenue. ⁽³¹⁾ It should be noted here that these estimates are based on revenue per acre. An intensive more complex analysis would probably require estimates based on revenue per apartment unit. ⁽³²⁾

While a substantial potential increase to the tax rolls is a possibility no municipal official cares to ignore, the tax base value alone of potential development is certainly not a major criteria for future planning. The placement of multi-family housing in any given area should be based upon a total evaluation of demand for this type of facility, coupled with a recognition of the total impact of multi-family housing on the community.

C. Impact of Apartment Construction on the Services and Values of Suburban Community

The traditional view of the congested urban apartment house contained not only the image of small crowded tenements overrun with children, but a general negative value orientation regarding the "kind of people" who lived in apartments. Even the most objective urban researcher felt that the apartment dweller was not really a member of the community. It was felt that the apartment dweller by reason of not owning real property did not support his community either economically or in terms of actual social and political participation. While there has not been a great deal of research on this aspect, there is some evidence indicating that the suburban dweller is not necessarily as isolated as his urban counterpart was supposed to be.

While it is true that the suburban apartment resident does not own real property, a valid argument could be made for his rather large economic contribution through various local taxes, as well as indirectly through the local tax shares included in rental payments. In condominium apartments, the tenant pays taxes directly and his monthly payments go toward eventual ownership of his apartment. ⁽³³⁾

The suburban apartment dweller in the newer developments tends to be a fairly avid shopper with a high per-capita spending capacity. Several studies have shown that the apartment resident does spend his money locally, at least at the same rate as the suburban home owner. The group also tends to support local charities at a rather high rate. Both the Windsor, Connecticut, study and the Sternlieb study support the view that the population of garden apartments tends to be well educated professional and technical personnel with fairly high incomes. A recent study of garden apartment residents in Highland Park New Jersey showed that there was a far greater proportion of professionals with high income living in apartments than the proportion living in the community as a whole. ⁽³⁴⁾

In his analysis of high-rental apartments in Philadelphia, Melamed found that sixty-two percent of those living in high-rental apartments in the urban fringe had incomes in excess of \$10,000 a year. Only ten percent of the incomes in the total Philadelphia Standard Metropolitan Area were of this level. ⁽³⁵⁾ In the same study, Melamed states that one hundred percent of the residents in high rental apartments in the urban fringe had incomes over \$5,000 a year. ⁽³⁶⁾

Melamed, in a rather small informal survey, found that the tenants in his study generally supported the improvements of public services at least as strongly as did the directly-taxed home owner. The apartment population also tended to be politically active, and participated as much in social and civic activities as did other housing groups. ⁽³⁷⁾ Remembering that many researchers feel that the majority of suburban apartment dwellers originally came from the same general areas in which they now reside, these findings should not be too surprising.

There is also some evidence that as the multi-family structures themselves grow older, the replacement population tends to be of the same household composition with the same social backgrounds.

The St. Louis County Apartment Survey also gathered data relevant to this problem of the apartment impact on the services and values of the community.

Our study found an average income of \$7, 243.12 in all the survey units built since 1960. The average income in older developments, while lower, was still within reasonable levels, being approximately \$6, 022.65. In both newer and older developments, income varied directly in relation to size of apartment, with tenants in one bedroom apartments having a lower annual income than those in three bedroom apartments. Annual income was gathered for each head of household. This breakdown is as follows:

TABLE XI
ST. LOUIS COUNTY SURVEY
AVERAGE ANNUAL TENANT INCOME

	One Bedroom	Two Bedrooms	Three Bedrooms	All Units
Units built since 1960	\$5, 778.39	\$7, 309.33	\$8, 784.09	\$7, 243.12
Units built prior to 1960	\$5, 899.36	\$5, 961.30	\$7, 436.78	\$6, 022.65

It should be obvious that these income differences are related to the amount of rent paid. The average rent by size of apartment is shown in the following table.

TABLE XII
ST. LOUIS COUNTY SURVEY
AVERAGE MONTHLY RENT

	One Bedroom	Two Bedrooms	Three Bedrooms
Units built since 1960	\$104.25	\$121.08	\$163.42
Units built prior to 1960	\$ 83.30	\$ 89.60	\$102.50

The variation in income related to size of apartment can be refined through an analysis of the percentage distributions in the following table.

TABLE XIII
ST. LOUIS COUNTY SURVEY
ANNUAL INCOME SINCE 1960: PERCENT

	One Bedroom	Two Bedrooms	Three Bedrooms	All Units
Under \$5,000	34.9	18.6	12.0	21.1
\$5,000-\$6,999	28.3	26.5	23.7	26.3
\$7,000-\$9,999	13.4	18.1	27.4	19.2
\$10,000-\$14,999	1.8	10.4	12.9	9.2
\$15,000 and over	.9	2.2	7.3	2.7
Income Unknown	20.7	24.2	16.7	21.5
Total (Number of cases)	100.0% (456)	100.0% (1,117)	100.0% (317)	100.0% (1,944)

It can be seen that the larger the apartment, the higher the income of the tenant. In our small sample of efficiencies, 73 percent had an income under \$7,000. Our sample of four bedroom apartments yielded an income distribution with 87 percent having an income exceeding \$10,000. The income distribution for developments built prior to 1960 is as follows.

TABLE XIV
ST. LOUIS COUNTY SURVEY
ANNUAL INCOME PRIOR TO 1960: PERCENT

	One Bedroom	Two Bedrooms	Three Bedrooms	All Units
Under \$5,000	36.0	31.4	13.4	32.5
\$5,000-\$6,999	30.2	30.4	26.8	30.1
\$7,000-\$9,999	12.6	14.6	38.2	14.8
\$10,000-\$14,999	4.2	3.9	10.3	4.3
\$15,000 and over	.9	.4	1.0	.7
Income unknown	16.1	19.3	10.3	17.6
Total (Number of cases)	100.0% (914)	100.0% (1,185)	100.0% (97)	100.0% (2,196)

Our survey also collected information on the occupations of the apartment population. Occupations of the head of household were classified according to the Edwards scale utilized by the U. S. Census. The Planning Staff classified occupation during data collection using this Census Classification.

The categories of "student," "widow," "divorced," and "retired" were added to the classification in order to encompass all tenants. The category of laborers and service occupations includes service occupations such as firemen, policemen, bartenders, etc.

TABLE XV
ST. LOUIS COUNTY SURVEY
OCCUPATION OF HEAD OF HOUSEHOLD SINCE 1960: PERCENT

	One Bedroom	Two Bedrooms	Three Bedrooms	All Units
Professional, technical, & kindred	25.5	31.6	28.1	29.3
Managers, proprietors, & officials	10.3	15.5	25.7	15.1
Clerical and sales workers	28.5	24.5	23.5	25.7
Craftsmen, foremen, & kindred	4.0	5.2	6.1	5.0
Operatives & kindred workers	3.6	3.3	3.4	3.5
Service workers and laborers	10.6	6.8	7.3	8.0
Students	1.8	2.6	.5	2.1
Retired	1.3	1.2	.7	1.2
Widow, Divorced	1.7	2.0	1.5	1.8
Occupation unknown	12.7	7.3	3.2	8.3
Total (Number of cases)	100.0% (1,216)	100.0% (2,270)	100.0% (409)	100.0% (3,964)

Looking only at the dichotomy between white collar and blue collar workers and leaving the residual categories out of our tabulation, we find the following breakdown:

TABLE XVI
ST. LOUIS COUNTY SURVEY
WHITE AND BLUE COLLAR WORKERS SINCE 1960: PERCENT

	One Bedroom	Two Bedrooms	Three Bedrooms	All Units
White Collar	64.3	71.6	77.3	70.1
Blue Collar	18.2	15.3	16.8	16.5
Total (Number of cases)*	82.5% (1,003)	86.9% (1,973)	94.1% (385)	86.6% (3,427)

* Remainder are residual categories.

This breakdown demonstrates that a large majority of the tenants hold white collar positions in the occupation scale. This proportion would be higher if students were included, since the majority of these were in graduate training for professional positions. There is some variation in terms of size of apartments, but this is probably related to the variations discussed earlier in income and amount of rent. The sample does contain a fairly large proportion of professional persons.

It would be of interest to compare this apartment sample with the occupational structure of the entire County, using the 1960 Census as a source and comparing this to our percent distribution for all surveyed apartment units built since 1960. For this comparison we eliminated the residual categories from our survey and re-tabulated for the occupational groups. We then combined U. S. Census Categories and eliminated farmers and farm workers from the Census tabulation. The percent comparison of our survey with the U. S. Census is as follows:

TABLE XVII
OCCUPATION OF HEAD OF HOUSEHOLD: PERCENT

	St. Louis County Survey: All Units Since 1960	U. S. Census 1960 Total St. Louis County*
Professional, technical & kindred	33.9	15.6
Managers, proprietors & officials	17.4	12.4
Clerical and sales workers	29.7	30.9
Craftsmen, foremen & kindred	5.8	16.4
Operatives and kindred	4.0	14.5
Service workers and laborers	9.2	10.2
Total (Number of cases)	100.0% (3,427)	100.0% (248,891)

* Computed from U. S. Census of Population, 1960, PC (1) 27C, Missouri

Our survey population seems to contain a much greater proportion of professionals than one would expect by chance. The only known possibility of

loading here is the fact that some cases of graduate medical students were tabulated as professionals. Since many of these persons were interns, however, this bias would seem to be negligible. The census enumeration is also subject to the same possibility of tabulation error.

The age of the development does not alter this picture to any great extent. The following table presents the occupational tabulation for older developments. We have again eliminated residuals for comparison purposes.

TABLE XVIII
ST. LOUIS COUNTY SURVEY
OCCUPATION OF HEAD OF HOUSEHOLD: PERCENT
ALL UNITS PRIOR TO 1960

Professional, technical & kindred	31.7
Managers, proprietors & officials	12.7
Clerical and sales workers	39.2
Craftsmen, foremen and kindred	4.2
Operatives and kindred	4.3
Service workers and laborers	7.9
<hr/>	
Total	100.0%
(Number of cases)	(2,197)

It would seem fairly evident, therefore, that suburban apartment developments attract white collar and professional tenants to a greater extent than we would expect to occur by chance. The complete occupational breakdown for our sample of older developments is given in the following table.

TABLE XIX
ST. LOUIS COUNTY SURVEY
OCCUPATION OF HEAD OF HOUSEHOLD PRIOR TO 1960: PERCENT

	One Bedroom	Two Bedrooms	Three Bedrooms	All Units
Professional, technical & kindred	23.0	26.3	29.9	25.0
Managers, proprietors & officials	7.0	12.0	15.0	10.0
Clerical and sales workers	34.7	28.9	20.3	30.9
Craftsmen, foremen & kindred	2.4	3.2	11.6	3.3
Operatives and kindred	4.0	2.9	2.7	3.4
Service workers and laborers	8.1	4.8	4.8	6.2
Students	7.6	8.8	4.1	8.0
Retired	4.0	4.2	----	3.9
Widow, Divorced	3.1	2.3	4.1	2.8
Occupation unknown	6.1	6.6	7.5	6.5
Total (Number of cases)	100.0% (1,193)	100.0% (1,447)	100.0% (147)	100.0% (2,787)

The modern multi-family suburban apartment building itself does not seem to increase local community burdens. Aside from not imposing any large special burdens on either the school or general value tax structure of the community, the modern multi-family development also tends to be less costly to the community in terms of other public services. Police and fire protection, trash collection and disposal, street maintenance and other community services tend to be less costly for newer fire-proof apartment buildings than for other structures in the community. (38)

It would seem, therefore, that in general the construction of a modern multi-family development within a community of predominantly single-family housing does not portend a lessening of either communal values or income for the suburban community. It is important to note, however, that it is not implied that a rapid increase in multi-family construction within any given community will cause little change. On the contrary, a rapid increase in any one type of land use, coupled with an increase in population and a change in the composition of that population, will cause

changes that need to be evaluated locally. Our survey data and the review of the literature demonstrate that the typical multi-family garden apartment development does not contribute overly to the creation of particular community problems. The question of the need for apartments within any given community is still a valid one requiring an evaluation of present and future population and land use trends within the metropolitan area, relating to overall county planning goals, as well as an evaluation based on the local community's present situation and future planning goals, related to the total environment.

IV. SOME RECOMMENDATIONS FOR APPROPRIATE DEVELOPMENTS

In this chapter, we will summarize the literature on the planning and construction of appropriate multi-family housing in the urban fringe. This chapter will not supply any set of formalized, rigid standards, but intends to offer several generalized recommendations regarding appropriate housing. The appropriateness of the multi-family development is taken to mean its capabilities for becoming a part of the community—both structurally and socially. We will briefly discuss various aspects of this "appropriateness" including structural type, site placement, density and rental levels. While no final set of standards will result from this analysis, it is hoped that the general summary presented will be of use to those engaged in local community planning and administration.

The problem of density of development and its relation to site planning and design criteria has been examined in a recent publication by Robert D. Katz.⁽³⁹⁾ In this monograph, Katz analyzes five measures of intensity of development and relates these to what he terms the quality or "liveability" of development. His concept of intensity includes the notions of density, coverage, floor area ratio, building type and size, and spacing. In terms of quality of development, Katz shows that as density increases, privacy generally declines. Increases in coverage, building type, and floor area ratio also have an inverse relationship to privacy. The use of screen walls, balconies, interior courts, and other artifacts may alleviate the lack of privacy. Adequate open space also is difficult to obtain with increased intensity of development. In general the five measures of intensity described above operate in inverse ratios to Katz's measures of quality of housing. The twelve aspects of quality which should be taken into account in determining the intensity of development in any given project are as follows: privacy, usable open space, individuality, diversity, location, proximity to community facilities, safety and health, circulation, automobile storage, blending, site details and views to and from the site.⁽⁴⁰⁾ While no rigid standards can be established

regarding these variables of quality, adequate apartment planning does require a recognition of their importance in determining the appropriateness of any given apartment development.

While specific density criteria must be developed locally, there are some general statements and recommendations which can be discussed briefly. The Community Builder's Handbook does have site recommendations for Planned Unit Developments containing mixed uses. Within these particular planned units, the Handbook recommends a relatively low ratio of multi-family to single-family from about 5 percent to a maximum of 15 percent of the total gross acreage allotted to residential use.⁽⁴¹⁾ This rule of thumb is recommended for planned developments containing mixed uses and cannot justifiably be applied to other areas. The Handbook also recommends that walk-up apartments in general should have low land coverage with a great deal of open space and be near shopping centers and recreational facilities. For walk-up apartments, the Handbook recommends a low density with not more than 25 percent of the site covered by building, as an absolute maximum. The preferable ratio is no more than 15 percent of the site covered by building.⁽⁴²⁾

The Federal Housing Administration has introduced a rather complex set of regulations for proper density of residential development. This sophisticated procedure utilizing "land use intensity rating," will not be discussed in this report, but is available in several sources. The American Society of Planning Officials in its publication, "Apartments in the Suburbs," covers this rating system in some detail.⁽⁴³⁾

For the developer, the problem of density is more often than not treated primarily as a cost factor. It is too often assumed that in order to pay for the cost of land, the developer must increase density as much as possible. Relevant studies relating land cost to size and density have shown that land cost should not be the determining factor for size, height, or density. In a theoretical study of cost, cited by William Ludlow, it was found that when cost of land was excluded, very high densities do not greatly decrease rentals or lower the cost to the consumer.⁽⁴⁴⁾ Cost factors

involved in maintenance and construction do not seem to vary greatly in terms of size of multi-family buildings. In any case, the cost factor does not seem variable enough to warrant using it as a determining factor for density of development. Density criteria must rest upon more social and design-oriented variables.

Anthony Wallace, in a sociological study of public housing, discusses in detail the relationship between density and social structure. (45) Wallace states that the amount of open land, usable for recreation on the site, is a most important consideration. He suggests a density ratio of between twelve and twenty dwelling units per acre in order to provide usable open area. It is a valid sociological finding that while density does increase social interaction between persons, certain optimum interaction levels must not be exceeded. The more dense the population, the more frequent are the social adjustments which have to be made in order for persons to live together. Social and psychological stress tends to proliferate above certain densities. Wallace recommends density be kept at a minimum, at least below twenty dwelling units per acre. (46) The observance of this maximum is stressed by a great many researchers, and is usually coupled with an emphasis on open area for the use of the residents.

In general, therefore, it would seem that low densities are recommended in suburban areas. The recommendations range from the Community Builder's Handbook low of 10-15 dwelling units per acre for garden apartments to a widely recommended maximum of approximately 20 dwelling units per acre. The survey results discussed in the last chapter demonstrates that most apartments surveyed in St. Louis County did fall within these recommendations. The average density of developments built after 1960 was approximately 15 units per acre. The older developments surveyed had an average density of 12 units per acre. Of the 29 developments, for which we had an acreage count, only 4 had over 20 units per acre. Of this same sample, only 5 had a density lower than 10 units per acre.

Density requirements are obviously related to size and height recommendations which will now be discussed with reference to the dichotomy between walk-up and elevator apartment developments.

The distinction between high-rise and walk-up developments is a major one involving important structural and social distinctions. The two types typically have different population and household compositions, as well as employing different materials and cost, allowing the builder of single-family homes to enter this market. Above three stories, the picture changes making it more prohibitive for the builder of single family dwellings to enter this market. ⁽⁴⁷⁾ Engineering requirements, plus typically stricter building codes necessitate different and heavier materials than are found in apartment structures under three stories. Building and fire regulations for high-rise apartments have a major impact on materials, design, number of exits, etc. The need for elevators, taken by itself, has a great effect on design materials and costs. ⁽⁴⁸⁾

These two major apartment types also differ in terms of the populations they contain. There is some evidence indicating that the high-rise development, particularly six stories and over, tends to attract older retired couples and single persons. These developments seem to be predominantly in the central city and typically rent for over 65 dollars a room. ⁽⁴⁹⁾

The population composition of the walk-up development is quite different and tends to be a suburban phenomenon. The suburban walk-up apartment attracts predominantly young couples who interestingly enough have the same socio-economic characteristics as new home buyers. ⁽⁵⁰⁾ This is particularly true of garden-type developments. The walk-up apartment is also typically larger than its high-rise counterpart. In 1954, 72 percent of the total dwelling units in F.H.A. insured walk-up developments had at least four and one-half rooms. Only 41 percent of the units in F.H.A. insured elevator apartment developments were of this size. ⁽⁵¹⁾

Anthony Wallace, in the study discussed earlier, elaborates on the social conditions which prompt him to recommend walk-up apartments

over the high-rise type. ⁽⁵²⁾ In recommending relatively low densities, Wallace stresses the need for controlled outdoor space, which is more difficult to achieve in a high-rise building. The need for yard space is, for Wallace, one basic requirement for family stability. While his conclusions refer particularly to public housing, they are relevant in general.

Wallace surveyed two large public housing projects, one a high-rise and the other a walk-up development. He found that the walk-up development was statistically preferable in terms of family structure and cohesion, participation in social activities, relative approval of the housing by the tenants, and various other indicies.

Wallace found that a main objection to high-rise was the lack of privately controlled outdoor space. While the amount of actual control over outdoor area available to any tenant, even in a low-rise building, is a rather moot point, it is fairly obvious that a second or even a third floor resident in a walk-up building does maintain at least visual control over the immediate outdoor environment. There is an area that potentially, if not actually, can be utilized by the low-rise tenant for recreation or passive leisure activities. This area is available to all households in the building and can be utilized by all, in activities ranging from car washing to a play area for children. The tenant on the ninth floor of a high-rise structure does not have this relationship with the outdoor area, even if such areas are available.

The experience in Westchester County New York, as reported by Hoover and Vernon, ⁽⁵³⁾ tends to support the recommendations presented here. In this County, the first wave of suburban apartments consisted of fairly high density multi-story buildings contiguous to village shopping centers and railroad stations. The newer wave of suburban apartment dwellers, however, have been elderly retired persons and younger married couples desiring low-rise, low-density structures of the garden type. The authors suggest that the rental rate here will be lower than the higher density developments and will be at levels high-middle income people can afford. ⁽⁵⁴⁾

"Natural selection" of apartment developments, measured by available market demand, would seem to indicate that the majority of successful apartment developments built outside the central city are of the garden-apartment type. The high-rise development serves a specialized market, consisting predominantly of single persons and older couples without children. Outside of the central city, high-rise buildings would probably be most appropriate in areas of high density, or in areas where planning goals anticipate high density development. In such areas, well designed high-rise structures can serve as community focal points.

In terms of general location, many studies have shown that multi-family developments should be located near major transportation facilities and major roads. Many authorities agree that the apartment development should also be near shopping centers and community facilities. The American Society of Planning Officials points out, however, that caution should be used in treating apartment developments as buffers between commercial and single-family districts. As a recent Planning Advisory Service information Report puts it, "Too many public officials assume that apartment developments are appropriate to buffer single-family neighborhoods from undesirable dirt, noise, light, and glare of commercial and industrial areas... Too often what happens is simply that a greater number of people are exposed to the same undesirable conditions. The use of apartments as buffers is not only ineffective, it is also a continuation of the 'second-class citizen' attitude." (55)

The problem of cost to tenant is an important factor which has not been subjected to the degree of analysis it deserves. In general, low-rise developments do tend to offer lower rentals than high-rise apartments. William Ludlow attempts to evaluate generalized cost to the consumer in terms of the type of dwelling. Assuming efficient and desirable standards of density, design, construction and operation, low raw land cost, and full improvements by the developer, Ludlow has ranked the following building types from the lowest to the highest overall cost to the consumer. (56)

1. Row flats
2. Row houses
3. Semi-detached houses
4. Detached houses
5. Three-story semi-fireproof walk-ups
6. Tall fireproof elevator apartments

While this ranking is quite risky in terms of universal application, it does indicate the possibility of lower cost to the consumer in the walk-up type apartment development. A recent feature by the Wall Street Journal supports this view, indicating that many high-rise apartments are in great financial trouble due to lack of tenant interest. (57)

To summarize, the literature on appropriate multi-family suburban housing reaches a consensus on the following recommendations:

1. Most present successful multi-family developments tend to locate near shopping centers and major transportation facilities and major roads.
2. While location near commercial facilities is desirable, the apartment development should not be considered a buffer district, and should be treated with the same considerations given other residential uses.
3. A low land coverage is recommended with a maximum of not more than 25 percent of the site covered with buildings.
4. The density should not be above 20 dwelling units per acre in any multi-family development and in low-rise developments should ideally be between 10 to 15 dwelling units per acre.
5. Provision should be made within the development for usable open area with particular spaces set aside for group recreation as well as specific open area allocated for the use of each housing unit.
6. Garden apartment development would seem to be most appropriate for medium density residential areas. High-rise apartment development is most appropriate for areas having high-density, where the high-rise structure serves a particular community design function.

7. The apartment development should be located in close relationship to community focal points and activities, such as schools and churches.

V. SUMMARY

This report has presented a survey of the recent relevant literature on multi-family housing in the urban fringe and has presented the results of a social survey of 6,751 multi-family units. Statistics have been given regarding the rapid growth of apartment construction in the nation as a whole and in St. Louis County. This increase in apartment construction has been related to certain characteristics of the population, particularly the age composition of the population and its household composition. It has been shown that increases in the young married population without children and an increase in the proportion of the population who are elderly and retired seem to account in great part for the increase in the desire for apartments.

We have also discussed the impact of the multi-family development on the suburban community and have analyzed certain notions regarding the impact of new apartment developments in areas of single-family residence. The literature and our survey have shown that in general large apartment developments do not seem to greatly increase the burden on suburban schools. It has been shown that apartments yield fewer children than do single-family residences. The proportion of school-age children does rise with an increase in the number of bedrooms in an apartment, but the average is still below that found in areas of single-family residence.

There is some evidence that the new elevator and garden apartments do pay their own way in terms of a community's tax base. The population of apartment developments do contribute to the income of the community in terms of indirect taxation and their fairly substantial purchasing power. Several studies and our survey have shown that the population of the newer garden apartment developments tends to be well educated professional or technical persons who do have an interest in their community.

We have also presented several recommendations regarding appropriate apartment development. The literature has shown that multi-family developments should be located near major transportation facilities and

major roads. A location near community facilities such as schools and shopping centers is also desirable. The development definately should not be used simply as a buffer district for the single-family areas. A low land coverage is recommended with a maximum of not more than 25 percent of the site covered with buildings, and the density in low-rise developments should ideally be between 10 and 15 dwelling units per acre. Garden apartment developments are recommended for medium-density areas, and high-rise developments are most appropriate within areas of high-density. In all cases, there should be a deliberate effort to develop a ground-level environment, with open space reserved for communal recreation, as well as portions of the outdoor space reserved as private areas for each tenant.

It is hoped that this report will be of use to municipal planning officials and others interested in the planning of appropriate residential facilities for their community. While it is felt that our survey of the characteristics of tenants of multi-family development in St. Louis County is representative of the total County, it must be recognized that any particular case may deviate from the norm. The planning and allocation of particular specific facilities within any given community must involve not only an awareness of area-wide problems and plans that reflect on the local community, but also must take cognizance of local factors that could not be covered within the context of this report.

VI. APPENDIX: SURVEY APPROACH, PURPOSE AND METHOD

Purpose of Survey

In the attempt to present a valid analysis of the composition of the apartment market in St. Louis County, it was found necessary to supplement census tabulations, and intensive reviews of the literature with original survey data gathered specifically for the purposes of this report.

Secondary sources, while quite plentiful, do not offer the researcher the elaborations of detail needed to fully analyze the local apartment situation. This is especially true in regard to any thorough study of the characteristics of tenants of multi-family development, and the impact of these groups on the local community. While several studies of this impact do exist, particularly in regard to the impact of apartments on the local schools, these studies are usually based on quite small samples, and are usually not subject to controls, such as amount of rent, apartment size, type of structure, and size of development. A study based solely on secondary data, also suffers from a lack of information regarding any particular characteristics present in the local market. Primarily for these reasons, a survey of multi-family construction in St. Louis County was conducted by the St. Louis County Planning Department.

Sample Size and Procedure

Since our report is primarily concerned with fairly large apartment complexes, capable of exerting a special influence on their environment, our sample was composed of this type of construction and did not emphasize isolated buildings of less than 10 units. Two and four family buildings were included where these structures were part of a larger complex—either composed of many two and four family buildings or part of a larger complex containing apartment buildings of varying sizes. We also limited our sample proper to developments built since 1960, although a smaller sample of 2,787 units from older developments was taken for comparison purposes.

Since no comprehensive list of developments meeting our requirements is available, it was not possible to construct a random sample prior to the field work. It was possible, however, to obtain an estimate of the total amount of multiple family construction taking place in the County since 1960 through the use of U. S. Construction Reports: Building Permits, Annual Summaries, 1960-1963, and utilizing data obtained from a mailed questionnaire to all municipalities regarding building permits issued in 1964. This data was tabulated and was dichotomized in terms of multi-family construction taking place within municipalities, and within unincorporated areas. It was felt that a fairly large sampling of apartment complexes, chosen in terms of matching our sample to the proportions actually existing in incorporated and unincorporated area would constitute a representative sample. Since the data obtained from building permit records simply indicates the number of families within any given structure, a fairly large sampling probably over-samples larger apartment complexes. The Construction Report tabulation gave us a County total of 13,344 housing units in three-or-more family buildings built since 1960. Our sample contained a total of 3,964 such units, or a total sample of 29.7%. This 30 percent sampling would seem to be adequate for our purposes. Of the 13,344 multiple-family units built since 1960, 9,202 were within incorporated areas, and 4,142 were incorporated, giving us 69 percent within municipalities, and 31 percent unincorporated. While it was not possible to match these proportions exactly, our sample was rather close, having 66.3 percent of our sample within municipal boundaries, and 33.7 percent unincorporated. In terms of representativeness, therefore, our sample was within 2.7 percent of a perfect match. The over-sampling of unincorporated construction was somewhat fortuitous since the present rate of multiple construction within St. Louis County indicates that the unincorporated portion might soon contain a higher proportion of total multiple construction than it has at present.

In terms of size of development, the 3,964 units were in forty

developments. Each development was surveyed as intensively as possible. The smallest sample at any one development was seven, and the largest sample at one development was 364 units. The mean number of units surveyed per development was 99. In all cases, at least a 25 percent sample was obtained at each development. 28 developments were within municipalities, and 12 developments were within unincorporated areas. In terms of housing units, the 28 incorporated developments contained 2,626 apartments surveyed and 12 unincorporated developments contained 1,338 units included in the survey.

Method of Survey

Since we wished to obtain a comprehensive picture of the resident population of new multi-family development, a generalized survey method was chosen over any intensive depth interviewing procedure. On the other hand, it was desirable that the data be as close to the individual as possible. For this reason, it was felt that interviews with apartment managers regarding their tenants would not yield information which would be either valid or in a refined form. The interview instrument would vary from manager to manager in terms of the willingness of the respondent to answer questions and the extent of the manager's knowledge regarding each tenant. For this reason, it was decided to utilize the same written document at every development. The information in our survey was, therefore, gathered from a tabulation of the tenant application forms, filed in the offices of the managers or owners of apartment developments. While individual form format was variable, each form used did contain as minimal information family composition, ages and number of children, and occupation of the tenant. Quite a few applications also contained information on the personal income of the tenant. Length of stay and size of apartment were obtained through the use of these applications and through lease information. While it was necessary to limit our investigation to those developments maintaining tenant application information, it was felt that this did not introduce any sort of selective bias into our sample. Of those

developments approached, very few did not have any sort of application, and in general, those without applications were somewhat idiosyncratic and would not have fit our selection criteria in other ways. For example, we were tentatively interested in drawing comparisons with new high-rise developments. It was found that the high-rise, high-rental developments queried did not require formal applications from their tenants to a greater extent than in low-rise garden apartments. Thus, while we were unable to gather some information because of our use of application forms, it is felt that this loss did not involve any great degree of sample bias.

Since no master list of apartments was available, sample selection was accomplished through field work and through the referral method. Representativeness was accomplished through an ongoing comparison of the sample with the total universe, both in terms of type of development and location.

The actual collection procedure consisted of tabulation of tenant applications within the office of the manager or owner of a given development. Two members of the Planning Department Staff performed the actual tabulation, using a specially designed Summary Sheet. Several internal checks were possible using this sheet, and these checks were made prior to the completion of the office appointment. When each development was summarized and tabulated in the planning staff office, a copy of the final summary sheet on each development was sent to the owner or manager of that development. The respondent was given a copy of only his own developments, and no information was given out on individual projects to anyone else.

Great care was taken to insure the confidentiality of the information collected. Each development was given a code number, and the name of the development and its location appeared in a separate log, which was kept by this writer. No tenant names were taken at any time. Since the initial data collection procedure involved summarizing tenant information on the spot, it would not be possible to refer back to an individual tenant, even if this was desired.

VII SUMMARY SHEET: MULTIPLE HOUSING SURVEY

	Eff.	1 Bedroom	2 Bedroom	3 Bedroom	4 Bedroom	Total
Number Existing						
Number Tabulated						

Summary Sheet Number _____ Date _____
 Number of Buildings _____ Number of Housing Units _____
 Size _____ (Acres) Number of Stories _____
 Year Built _____ Accessory Buildings (Type and Number) _____

	Effic.	1 Bed	2 Bed	3 Bed	4 or More	Total
No. Dwelling Units						
Rent (Monthly)						
Vacancies						
Households						
# one person						
# roommates						
# couples, no children						
# couples, one child						
# couples, two children						
# couples, three or more						
Odd household						
Total Population						
# Adults						
# children under 5 years						
# children 5-13 years						
# children 14-18 years						
# children 19-21 years						
# children over 21						
Unknown ages						
Occupation						
Prof. Tech., etc.						
Manag. Prop., etc.						
Clerical, Sales						
Crafts, Foreman						
Skilled Operatives						
Service workers and Laborers						
Student						
Retired						
Widow, Divorced						
Unknown						
Income						
Under \$5, 000						
\$5, 000 - \$6, 999						
\$7, 000 - \$9, 999						
\$10, 000 - \$14, 999						
\$15, 000 and over						
Unknown						
Parking spaces _____						
Garages _____						
Lease _____						
What does rent include? _____						
Restrictions on children _____						

	Eff.	1 B.	2 B.	3 B.	4 B.		Eff.	1 B.	2 B.	3 B.	4 B.
Less 1 year						3 yr. -4.11 mos.					
1 yr. 1.11 mos.						5 yr. -9.11 mos.					
2 yr. 2.11 mos.						10 yr. & over					

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